WHAT IS CLAIMED IS:

1. An apparatus for detecting an amount of strain comprising:

a strain generating part to which strain is to be applied;

an electrical insulating layer formed on the strain generating part; and

sensing elements formed on the electrical insulating layer, each of said sensing elements being made of a silicon film, said silicon film comprising a poly-crystalline main layer and a poly-crystalline interface-layer, which comes into contact with the electrical insulating layer.

2. The apparatus as claimed in Claim 1, wherein:

said silicon film is subjected, after formation thereof, to an annealing process at a temperature of from 540°C to 590°C.

3. The apparatus as claimed in Claim 1, wherein:

said strain generating part has a main body made of martensitic precipitation hardened stainless steel, which comprises from 3 to 5 wt.% Ni, from 15 to 17.5 wt.% Cr and from 3 to 5 wt.% Cu.

4. The apparatus as claimed in Claim 2, wherein:

said silicon film contains an impurity as added in such a manner that specific resistance of the silicon film before said annealing process is within a range of from 7×10^{-3} Ω•cm to 3.3×10^{-2} Ω•cm and the specific resistance of the silicon film after said annealing process is within a range of from 3×10^{-3} Ω•cm to 1.7×10^{-2} Ω•cm.

5. The apparatus as claimed in Claim 4, wherein:

said impurity is boron.

6. A method for manufacturing an apparatus for detecting an

amount of strain, comprising the steps of:

(a) preparing a strain generating part to which strain is to be applied, ;

(b) forming an electrical insulating layer on said strain generating part;

(c) preparing material for a silicon film; and

(d) forming the silicon film on said electrical insulating layer, utilizing said material to provide sensing elements thereon, said silicon film comprising a polycrystalline main layer and an interface-layer, which comes into contact with the electrical insulating layer,

characterized in that:

said step (a) is carried out, utilizing martensitic precipitation hardened stainless steel, which comprises from 3 to 5 wt.% Ni, from 15 to 17.5 wt.% Cr and from 3 to 5 wt.% Cu, to form a main body of said strain generating part;

said step (c) comprises adding boron as an impurity to said material for the silicon film so that specific resistance of the silicon film is within a range of from 7×10^{-3} Ω•cm to 3.3×10^{-2} Ω•cm; and

said method further comprises (e) subjecting, after said step (d), said silicon film to an annealing process at a temperature of from 540°C to 590°C so that the specific resistance of the silicon film is within a range of from 3×10^{-3} Ω•cm to 1.7×10^{-2} Ω•cm, thus crystallizing said interface-layer.

7. The method as claimed in Claim 6, wherein:

said step (e) is carried out in plasma into gas.